# PLATE-MAKING METHOD OF LITHOGRAPHIC PRINTING PLATE

## FIELD OF THE INVENTION

The present invention relates to a plate-making method of a lithographic printing plate. More specifically, it relates to a plate-making method of a lithographic printing plate that enables to prepare a printing plate free from printing stain and excellent in press life and in which safety of a developing solution, stability of developing characteristics with the lapse of time and influence of waste liquid upon environment are improved.

## BACKGROUND OF THE INVENTION

A negative-working photosensitive lithographic printing plate widely used hitherto comprises an aluminum plate subjected to hydrophilic treatment having provided thereon a diazo resin layer. In a developing solution for use in the development thereof, an organic solvent is necessarily used and thus, it is anxious for treatment of the waste developing liquid and influence thereof to environment. On the other hand, an orthoquinone diazide compound and a novolak resin are used together in a photosensitive layer of a positive-working photosensitive lithographic printing plate, and as a developing solution therefor, an aqueous alkaline solution of silicate capable of dissolving the novolak resin is used. A pH necessary

for dissolving the novolak resin is about 13 and the developing solution having such a high pH is required to handle with sufficient caution since it is strongly stimulative when adhered to skin or mucous membrane.

As a developing solution for a lithographic printing plate having a photosensitive layer of photopolymerization type on an aluminum plate support, there is proposed an aqueous solution of a silicate, phosphate, carbonate or hydroxide of alkali metal or an organic amine compound.

For instance, a developing solution having a high pH of 12 or more and containing an alkali salt of silicic acid and an amphoteric surface active agent is described in JP-A-8-248643 (the term "JP-A" as used herein means an "unexamined published Japanese patent application") and a developing solution having a high pH of 12 or below and containing an alkali salt of silicic acid with the specified ratio of $SiO_2/M_2O$ (wherein M represents an alkali metal) is described in JP-A-11-65129. The former has a problem in that the image area tends to damage upon development with the developing solution having such a high pH in addition to the problem of handling as described above. The latter has a problem in that the silicate may be gelled and insolubilized upon a slight decrease in pH of the developing solution during development.

As a developing solution containing no alkali salt of salicic acid, a developing solution comprising an alkali agent, a complexing agent, an anionic surface active agent, an emulsifying agent and an n-alkanoic acid is described in JP-A-61-109052 and a developing solution comprising an alkali agent, a complexing agent, an anionic surface active agent, an aminoalcohol and an N-alkoxyamine is described in West German Patent 1,984,605. However, these developing solutions damage severely the image area due to the high pH thereof or the organic solvent contained therein and thus, it is difficult to obtain printing characteristics such as press life.

As a developing solution having a relatively low pH (pH of 12 or below) and containing no alkali salt of salicic acid, an aqueous potassium hydroxide solution containing an anionic surface active agent is described in JP-A-2000-81711 and an aqueous solution of alkali metal carbonate having a pH of 8.5 to 11.5 is described in JP-A-11-65126.

Development with such a developing solution having a relatively low pH has a problem in that since the developing solution has essentially a weak power for dissolving a photosensitive layer of photopolymerization type, for example, when a printing plate of such a type which has been preserved is treated, the development